

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAYANTHA AMARASEKERA
and JAMES EDWARD DOIN

Appeal 2006-2221
Application 09/000,824
Technology Center 1700

Decided: October 31, 2006

Before GARRIS, WARREN, and LINCK, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the decision of the Examiner finally rejecting claims 1 through 17, 19 through 24 and 33, all of the claims in the application.

The appeal was heard on September 12, 2006.

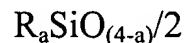
Claims 1 and 17 illustrate Appellants' invention of a silicone polymer composition, and are representative of the claims on appeal:

1. A composition comprising:

- (a) from about 15% to about 50%, by weight of the total composition, of a silicone polymer;
- (b) from about 5% to about 30% by weight of the total composition of a reinforcing filler;
- (c) from about 20% to about 70% by weight of the total composition of an anti-tracking agent and a flame retardant;
- (d) from about 0.01% to about 1% by weight of the total composition of a coupling agent;
- (e) from about 0.1% to about 5% by weight of the total composition of a curing agent;
- (f) up to about 20% by weight of the total composition of an extending filler; and
- (g) from about 0.1% to about 5% by weight of the total composition of at least one processing fluid.

17. A silicone rubber composition comprising:

(A) 100 weight parts organopolysiloxane gum having at least 2 silicon-bonded alkenyl groups in each molecule and the average compositional formula:



in which R is selected from substituted and unsubstituted monovalent hydrocarbon groups and a has a value from 1.95 to 2.05;

- (B) 10 to 300 weight parts aluminum hydroxide powder;
- (C) 0.1 to 1 weight part of a silane coupling agent, and
- (D) 0.1 to 5 weight parts of a peroxide based curing agent.

The references relied on by the Examiner are:

Milbert	US 3,821,140	Jun. 28, 1974
Dams	US 4,355,129	Oct. 19, 1982
Matsushita	US 5,824,729	Oct. 20, 1998

The Examiner has advanced the following grounds of rejection on appeal:

claims 17 and 19 through 24 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement (Answer 3);
claims 1 through 6, 8 through 13, 15 through 17, 19 through 24 and 33 under 35 U.S.C. § 102(e) as anticipated by Matsushita (Answer 3-4);
claims 7, 12 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Matsushita (Answer 4-5); and
claims 1 through 17, 19 through 24 and 33 under 35 U.S.C. § 103(a) as being unpatentable over Dams in view of Milbert (Answer 5-8).

Appellants argue the claims in each ground of rejection as a group (Br. in entirety). Thus, we decide this appeal based on appealed claim 17 with respect to the first ground of rejection and claims 1 and 33 with respect to the other grounds of rejection as representative of the grounds of rejection and Appellants' arguments. 37 C.F.R. § 41.37(c)(1)(vii) (2005).

We affirm.

We refer to the Answer and to the Brief and Reply Brief for a complete exposition of the positions advanced by the Examiner and Appellants.

OPINION

We find that the record supports the Examiner's position that, prima facie, as a matter of fact the written description in the Specification as a whole as filed does not describe to one skilled in this art (1) the range 0.1 to 5 weight parts of a peroxide based curing agent and (2) the average compositional formula of the organopolysiloxane gum specified for the silicone rubber compositions in claim 17 in a manner establishing that Appellants were in possession of the claimed silicone rubber compositions

encompassed by this claim at time the application was filed (Answer 3 and 8-10). The Examiner's finding that claim 17 encompasses embodiments that are outside of the scope of the written description in the Specification is sufficient to establish the *prima facie* case, shifting the burden to Appellants to establish otherwise. Accordingly, we again evaluate all of the evidence in the written description in the Specification as a whole, giving due consideration to the weight of Appellants' arguments in the Brief and Reply Brief. *See, e.g., In re Alton*, 76 F.3d 1168, 1172, 1175-76, 37 USPQ2d 1578, 1581, 1583-84 (Fed. Cir. 1996); *In re Wertheim*, 541 F.2d 257, 262-65, 191 USPQ 90, 96-98 (C.C.P.A. 1976).

With respect to the first issue, the subject limitation of claim 17 is "(D) 0.1 to 5 *weight parts* of a peroxide based curing agent" (emphasis supplied). Appellants rely on the generic description of a composition containing any manner of a silicone polymer in the Specification at page 2, ll. 19-28 (Reply Br. 3).¹ Appellants point to the limitation on the curing agent in that description, "(e) from about 0.1% to about 5% *by weight of the total composition* of a curing agent" (emphasis supplied), and argue that "in terms of percentages, the *total weight parts* of that "embodiment" is 100, and thus "the range recited in claim 17 '0.1 to 5 weight parts' (which is based on the total composition) corresponds to the range disclosed" (Reply Br. 4). Appellants allege that "in claim 17, where the range of total weight parts has a lower limit of 110.2 and an upper limit of 406, the claimed range of '0.1 to 5 weight parts' is equivalent to the range of 0.091% (or

¹ We note that the complete description of the composition continues to page 3, l. 4, of the Specification.

approximately 0.1 %) and 1.23% by weight of the total composition,” and therefore, “within the scope of the broader range ‘from about 0.1% to about 5%’ supported by the specification” (Reply Br. 4). Appellants further contend that the peroxide based curing agent present in the amount of 0.4% and 0.5%, respectively, based on the weight of the total composition, in Specification Examples 1 and 2 supports the claimed range (Reply Br. 5).

We cannot agree with Appellants’ position for several reasons. First, the stated range of from 0.091% to 1.23% by weight of the total composition correctly reflects the values obtained based on the sum of all of the lowest amounts and the sum of all of the highest amounts in the range of each of the four specified ingredients. However, the full scope of the claimed compositions is in fact obtained when the calculation is based on the sum of the highest amount in the range of the peroxide based curing agent and the lowest amount in the range of each of the other three specified ingredients, and the sum of the lowest amount in the range of the curing agent and the highest amount in the range of each of the other three specified ingredients. On this basis, the actual range of the peroxide based curing agent in claim 17 is 0.025% to 4.34% by weight of the total composition.

It is evident that the lower end of the range of 0.091% to 1.23% by weight of the total composition and of the range 0.025% to 4.34% by weight of the total composition with respect to the curing agent based only on the ingredients specified in claim 17, fall significantly below the lower end of the range of from about 0.1% to about 5% by weight of the total

composition based for this ingredient described in the written description in the Specification.

Second, we determine that the compositions encompassed by claim 17 are not limited to the four ingredients in the amounts specified in that claim, as indeed, the transitional term “comprising” opens the compositions to unlimited amounts of any additional ingredients. *See, e.g., Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) (“The claimed composition is defined as comprising - meaning containing at least - five specific ingredients.”); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (C.C.P.A. 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”). For example, Specification Example 1, relied on by Appellants, describes a composition which comprises five additional ingredients: (1) a reinforcing filler which is surface modified with an apparent processing fluid; (2) a different processing fluid; (3) an extending filler; (4) a mold release agent; and (5) black color pigment master batch. The first three ingredients correspond to components (b), (f) and (g) of the embodiment in the Specification at page 2, l. 18, to page 3, l. 4. The latter two are described in the Specification at page 4, l. 26, to page 5, l. 2, and page 5, ll. 17-18.

We further determine that unlike the disclosed embodiment in which the ingredients are present in ranges of amounts based on percent by weight of the total composition (Specification 2:18-3:4), in claim 17 there is no limitation on amounts of the ingredients based on “the total composition” as

Appellants argue (Reply Br. 4). Indeed, in claim 17, each specified range is stated in “weight parts” which remain fixed regardless of the weight of the total composition. For example, the organopolysiloxane gum ingredient must be present only in the amount of “100 weight parts” regardless of the amount of any other ingredient present. Where the compositions consist only of the four specified ingredients, the total weight parts of the compositions range from 110.2 to 406 weight parts. Thus, the “100 weight parts” of the organopolysiloxane gum as a percentage by weight of the total composition ranges from 24.63 to 90.74 percent by weight. However, when additional ingredients are present in amounts such that the total weight parts of the composition exceeds 406 weight parts, the “100 weight parts” of the organopolysiloxane gum as a percentage based on the weight of the total composition falls below 24.63 percent by weight. The same result obtains with each of the other specified ingredients.

Thus, claim 17 encompasses compositions wherein additional ingredients, such as those used in the composition of Specification Example 1, are present in amounts that result in the amount of the curing agent present in the compositions, in terms of percent by weight of the total composition, falling significantly below the lower end of the disclosed range of from about 0.1% to about 5% by weight of the total composition for this ingredient.

Therefore, on this record, Appellants have not carried the burden of establishing that the full range of compositions encompassed by claim 17 falls within the scope of the written description in the Specification.

Cf. Wertheim, 541 F.2d 257, 263-64, 191 USPQ 90, 97 (solids content range

of “at least 35%” in method claim reads on embodiments employing solids contents outside of described range of “25-60%”).

With respect to the second issue, the Examiner submits that the average compositional formula $R_aSiO_{(4-a)}/2$ of the organopolysiloxane gum specified for the silicone rubber compositions in claim 17 is not supported in the Specification with respect to (a) the limitations “at least 2 silicon bonded alkenyl groups in each molecule” and “R is selected from substituted and unsubstituted monovalent hydrocarbon groups;” and (b) the limitation “a,” in the formula member R_a and in $SiO_{(4-a)}$, “has a value from 1.95 to 2.05” (Answer 3 and 9). With respect to the former, the Examiner contends that “the methyl and vinyl groups of the [diorganopolysiloxane] of [Specification] Example 1 do not support the generic terms . . . hydrocarbon and alkenyl groups, respectively” (Answer 9).

With respect to the latter, the Examiner first finds that “‘a’ can not even be calculated [from the diorganopolysiloxanes of Specification Example 1] since the molecular weight of the siloxane is not disclosed” (Answer 9). The Examiner then explains that “[t]he relationship between the degree of polymerization n and a is $a = \{2.0+2.0/(n+1)\}$ ” (Answer 9-10). The Examiner finds when the degree of polymerization n is in the range of 1,000 to 20,000 as disclosed in Matsushita (Matsushita col. 2, ll. 17-19), relied on by Appellants (Br. 12), ‘the corresponding a should be . . . 2.002~2.0001, which is in the range of 1.95 to 2.05” (Answer 10). Thus, the Examiner concludes that the “siloxane represented by the formula $R_aSiO_{(4-a)}/2$ with a in the range of 1.95 to 2.05 is much broader than the

siloxanes” within the degree of polymerization range of 1,000 to 20,000” (*id.*).

Thus, the Examiner finds that the generic embodiment of the siloxanes in the Specification at page 3, l. 20, to page 4, l. 5, does not fully support the “siloxane limitation of component (A) of claim 17” (Answer 10).

Appellants rely on the two organopolysiloxane gums described in Specification Example 1 at page 12, ll. 9-13, which comprise different amounts of dimethylsiloxane units and methylvinylsiloxane units (Br. 11). Appellants contend that “[t]hese example [sic], particularly when viewed in the context of formula I and the substituent groups disclosed in the application, are sufficiently representative to inform a person skilled in the art that Appellants were in possession of the formula recited in claim 17” (Br. 11). Appellants point out that the claimed compositional formula is the same as that disclosed in Matsushita and that the two units in the gums of Specification Example 1 are two of a total of four units disclosed in Matsushita at col. 2, ll. 20-23 (Br. 11-12). Appellants further point out that the range “ n is 1,000 to 20,000” is disclosed in the Specification at page 4, ll. 4-5 (Br. 12).

Appellants do not dispute the Examiner’s finding with respect to the relationship between a in the claimed formula and the degree of polymerization n , and the calculation of a in the compositional formula based on the n range 1,000 to 20,000 (Reply Br. 5-7). Appellants contend that “there is a sufficient description of a representative number of species in the Specification” and that the terms “hydrocarbon” and “alkenyl groups”

are “disclosed in the specification, for example, at page 5, line 26, which provides: ‘[i]llustrative examples of such alkenyl groups are vinyl, allyl, or propynyl’ (Reply Br. 6). Appellants further contend that support for “the term hydrocarbons is found, for example, at page 4 in the context of formula I, where the substituent groups disclosed in the Specification are sufficiently representative” (Reply Br. 6-7).

We find that Appellants disclose in the Specification that the “silicone polymer” of the “composition” described at page 2, l. 18, to page 3, l. 4, “is represented by recurring units of formula I” (Specification 3:20-21). Formula I can be linearly depicted as $R^3O-[Si(R^1)(R^2)-O]_n-Si(R^1)(R^2)-OR^3$,

wherein, R^1 independently at each occurrence represents C_{1-4} alkyl, or C_{2-4} alkylene; R^2 independently at each occurrence represents C_{1-4} alkyl, C_{1-4} haloalkyl, or C_{2-4} alkylene; R^3 independently at each occurrence represents H, C_{1-10} alkyl, C_{2-4} alkylene, C_{4-6} cycloalkyl, OH, C_{1-4} haloalkyl; and n represents an integer from 1,000 to 20,000. [Specification 3:22-4:5.]

Silicone polymers having delimited “R” groups and “n” values are also described (Specification 4:6-11). It is further disclosed that “[t]he diorgano-polysiloxane used in these formulations is a polysiloxane having at least a two silicon atom-bonded alkenyl group per one molecule,”² and “[i]llustrative examples of such alkenyl groups are vinyl, allyl, or propynyl,” wherein “[t]he structure of the polysiloxane may be either linear structure or a branched one” (Specification 5:24-28). It is still further disclosed that

² The structure described in this disclosure does not fall within formula I. It reasonably appears that in light of the disclosure in the Specification as a whole, this disclosure should read “at least [a] two silicon atom-bonded alkenyl groups per one molecule.”

“[t]he molecular weight of the polymer is not limited and any of those called organopolysiloxanes gum in the industry are employable” (Specification 5:6-6:2). In Specification Examples 1 and 2, the two diorganopolysiloxane gums in each Example consist of different amounts of dimethylsiloxane units and methylvinylsiloxane units (Specification 12:9-13 and 14:9-13).

We disagree with Appellants’ position that this disclosure in the written description in the Specification is sufficiently representative of the claimed class of compositions encompassed by appealed claim 17 to establish that Appellants were in fact in possession thereof at time the application was filed. Indeed, one skilled in this art would have recognized that the extent of the “alkenyl groups” described in the Specification is “C₂₋₄ alkylene” which encompasses the species vinyl, allyl, and propynyl, while the claim term would have its customary meaning in context of any “unsubstituted, univalent aliphatic radical.”³ This person would have further recognized that the remaining organic substituents other than alkenyl groups for the “R” groups are alkyl and cycloalkyl groups of limited hydrocarbon content and the sole substituent is a halogen atom on an alkyl group of limited hydrocarbon content. The claim term “hydrocarbon” would be considered in context to have its customary meaning of any group “consisting of only C and H,”⁴ and as modified by the term “substituted,” would include any manner of substituent on that group. There is no disclosure of, for example, a phenyl group substituted with an alkoxy group.

³ See, e.g., *Hackh’s Chemical Dictionary*, 27 (Julius Grant, ed., 4th ed., New York, McGraw-Hill Book Company, 1969.)

⁴ See, e.g., *id.* at 331.

Furthermore, there is no broader disclosed range for “n” than 1,000 to 20,000.”

Appellants’ burden in establishing that one skilled in the art would have recognized from the written description in the Specification that they were in possession of a class of compounds significantly broader in scope than the class reasonably described at the time the application was filed is indeed a most difficult one. On this record, Appellants have not carried their burden. *See, e.g., In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (a written description of a subgenus does not provide a description of the genus); *In re Lukach*, 442 F.2d 967, 969-70, 169 USPQ 795, 796-97 (C.C.P.A. 1971) (a single example inherently disclosing a species encompassed by the claim does not describe the claimed class of compounds), *cited with approval in Chester v. Miller*, 906 F.2d 1574, 1577, 15 USPQ2d 1333, 1336 (Fed. Cir. 1990); *In re Ahlbrecht*, 435 F.2d 908, 911, 168 USPQ 293, 296 (C.C.P.A. 1971) (“no description in full, clear, concise, and exact terms” for later claimed expanded class of compounds).

With respect to the disclosure in the Specification that “any of those called organopolysiloxanes gum in the industry are employable,” we point to the guidance of our reviewing Court: “One shows that one is ‘in possession’ of *the invention* by describing *the invention*, with all of its claimed limitations, not that which makes it obvious. . . . It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but

failed to disclose.” *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1571-72, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997) (citation omitted).

Finally, Appellants’ reliance on the disclosure and claims in Matsushita is misplaced. Not only is 35 U.S.C. § 112, first paragraph, written description requirement, directed to the application being considered, but it is immaterial to that consideration whether the same or similar claims were patented in another application. *Wertheim*, 541 F.2d at 263-64, 191 USPQ at 97.

Accordingly, we affirm the ground of rejection of claims 17 and 19 through 24 under 35 U.S.C. § 112, first paragraph, written description requirement.

Appellants do not dispute the grounds of rejection under § 102(e) and under §103(a) over Matsushita, stating with respect to each that consideration of the Requests for Interference pursuant to 37 C.F.R. § 1.607 and accompanying affidavit under 37 C.F.R. § 1.608 “will remove Matsushita as a reference” (Br. 12-14; Reply Br. 7-8). The Examiner maintains the grounds of rejection in view of the ground of rejection under § 112, first paragraph, written description requirement. Accordingly, on this record, we summarily affirm the grounds of rejection of claims 1 through 17, 19 through 24 and 33 under 35 U.S.C. §§ 102(e) and 103 (a) over Matsushita as applied by the Examiner.

We have carefully reviewed the record on this appeal and based thereon agree with the supported position advanced by the Examiner that, prima facie, the claimed compositions encompassed by appealed claims 1 and 33 would have been obvious over the combined teachings of Dams and

Milbert as applied by the Examiner⁵ to one of ordinary skill in this art at the time the claimed invention was made. Accordingly, we again evaluate all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of Appellants' arguments in the Brief and Reply Brief and the evidence in the Specification to the extent argued in these two documents. *See, e.g., In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We initially note for purposes of the following discussion that the term "aluminum hydroxide" is the common name of the compound "alumina trihydrate" which is also identified by the acronym "ATH" (Specification 6:15-16).

The Examiner finds that Dams would have disclosed to one of ordinary skill in this art each and every component specified for the claimed composition encompassed by claim 1, pointing out that the reference would have taught, among other things, "a coupling agent (col. 2, lines 38-49)" and "a processing fluid of a polydimethylsiloxane free of vinyl groups or a hydroxyl-containing siloxane" at col. 2, ll. 43-44 (Answer 5-6). The Examiner further finds that the Dams Example differs from claim 1 in that

⁵ We have not considered United States Patent 5,583,172 issued December 10, 1996, to Imahashi discussed by the Examiner (Answer 12-13) and Appellants (Br. 17). This is because Imahashi was not set forth in the statement of this ground of rejection. Reliance on a reference to support a ground of rejection that is not included in the statement of the rejection is clearly impermissible. *See In re Hoch*, 428 F.2d 1341, 1342 n. 3, 166 USPQ 406, 407 n.3 (C.C.P.A. 1970); *cf. Ex parte Raske*, 28 USPQ2d 1304, 1304-05 (Bd. Pat. App. & Int. 1993).

the fumed silica is not treated with a coupling agent, and that the reference teaches modifying the surface of the filler with a coupling agent in situ to improve bonding thereof with the silicone polymer, the amount of the coupling agent being determined through routine experimentation (Answer 6). In this respect, the Examiner determines that “it would have been obvious . . . to employ Dams’ teaching to add a processing fluid such as polydimethylsiloxane free of vinyl groups to improve the processability and a coupling agent such as vinyltrimethoxysilane to the siloxane composition to treat the surface of the silica filler in situ to improve bonding between silica filler and the siloxane” (Answer 7).

The Examiner relies on Milbert for the disclosure of particular hydroxyl-containing siloxanes with respect to the claimed compositions encompassed by appealed dependent claim 33 (Answer 7). In this respect, the Examiner finds that Milbert would have disclosed polysilicone compositions for electrical insulating material “comprising all the components as claimed in the instant claims except the alumina trihydrate anti-tracking agent” (Answer 7 (citing col. 1, l. 35, to col. 4, l. 10, col. 4, ll. 24 and 45-46, and Examples)). The Examiner determines that “it would have been obvious . . . to employ Milbert’s hydroxyl terminated siloxanes such as α,ω -di-hydroxy-dimethylsiloxanes to Dams’ composition to provide a high voltage insulation material with improved bonding between the silicone polymer and the fillers such as silica and alumina trihydrate and processability” (Answer 7-8).

Appellants contend that one of ordinary skill in the art would not have combined Dams and Milbert because the references are directed to the

different purposes of “silicone rubber with improved color retention when exposed to corona discharge” and “fire resistant elastomer,” respectively (Br. 15-16). Appellants further argue that the references fail to disclose the claimed range of the coupling agent specified in claims 1 and 17, and “there is no evidence that the amount of the coupling agent was recognized in the prior art to be a results-effective variable” (Br. 16-17 and 18). Appellants allege that a comparison of data reported in Specification Table I and in Milbert Tables I, III, IV, and V, “shows that [sic] composition claimed in the pending application achieves a Shore A Hardness of 70 as compared to the composition of the prior art which achieves considerably lower values” (Br. 18-19). Appellants further point to the disclosure “at higher silane coupling agent concentrations (VTES), and higher ATH loading the product showed increased times to failure in tracking and erosion testing” in the Specification at page 13, l. 22, to page 14, l. 2 (Br. 19).

The Examiner responds that the references are analogous because both Dams, at col. 1, ll. 8-19, and Milbert, at col. 4, ll. 1-9, “teach those silicone compositions being used . . . as insulating sheaths for electrical conductors” which is the same area of endeavor (Answer 11). The Examiner points out that Milbert would have taught that the combination of filler and coupling agent would “enhance the mechanical properties of the cured silicone composition” (*id.*). The Examiner further points out that Dams expressly teaches “a hydroxyl-containing siloxane can be used to modify the surface of filler,” contending that “[w]hen the hydroxyl-containing siloxane is used as a coupling agent, it also function [sic] as the processing fluid” (*id.*). The Examiner maintains that one of ordinary skill in

the art would have been “motivated to employ the hydroxyl group containing silicone polymer as the processing fluid to Dams’ silicone composition to improve the processability of Dams [sic] silicone composition before curing and to enhance the bonding between the fillers (silica and alumina trihydrate) and the silicone polymer to provide a cured rubber with improve mechanical properties” (Answer 11-12).

The Examiner submits that Appellants’ comparison of data reported in the Specification with data in Milbert does not show unexpected results with respect to Dams, the primary reference, and does not disclose the property of Shore A hardness (Answer 13). The Examiner further submits that “even if Appellants’ few limited working examples provide superior Shore A hardness of about 70, such showing is not commensurate with the scope of the claims because the Specification does not disclose that the silicone compositions of the entire claimed range have Shore A hardness of about 70” (*id.*).

Appellants further contend that the “desired physical properties of the present silicone compositions are, for example, Tear B resistance and Shore A hardness,” disclosed in the Specification at pages 8-9, “are not the subject of the Dams and Milbert references, which teach silicone rubber with improved color retention or elastomers with fire resistant properties, respectively” (Reply Br. 10). Appellants allege that “because the references do not recognize the claimed ranges as parameters for the desired physical properties of the claimed compositions, the ranges are not result-effective variables” (*id.*). Appellants further allege that “[i]t would appear that the Examiner has failed to consider this evidence of unexpected results, stating

instead, that the Appellant ‘must show criticality and unexpected results over the primary reference Dams’” (Reply Br. 13). Appellants still further allege that, as in *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995), “the present specification contains more than mere argument or conclusory statements; it contains specific data indicating unexpected properties” (Reply Br. 14).

We agree with the Examiner that Dams would have disclosed to one of ordinary skill in this art each and every component (a) through (g) specified for the claimed composition encompassed by claim 1 as required therein with direction to combine the same for the purpose of preparing silicone elastomers for use in, among other things, preparing high and low voltage insulation with the same or similar properties (Dams, e.g., col. 1, ll. 5-19 and 30-45, col. 2, l. 50, to col. 3, l. 5, col. 3, ll. 16-27). We particularly note the teaching in Dams to use ATH in this respect (Dams col. 3, ll. 23-28), and that Appellants describe this ingredient as “an anti-tracking agent and flame retardant” (Specification 6:15-26).

With respect to the coupling agents and processing fluids, we further find that Dams would have disclosed that the surface of the reinforcing and non-reinforcing fillers can be modified for use with the organopolysiloxane elastomers by art recognized methods including “pretreatment or in situ treatment . . . with a variety of organosilicon products” (Dams col. 2, ll. 21-49). Among the organosilicon products disclosed by Dams are vinyl alkoxysilanes and hydroxyl-containing methylsiloxanes (Dams col. 2, ll. 42-43). Appellants describe the former compounds as “coupling agent” and the latter compounds as “processing fluid” (Specification 4:17-19 and

25). Dams teaches that “[i]t is normally preferred that the treatment of the filler be carried out in situ, that is by incorporating the treating agent per se into the curable composition” (Dams col. 2, ll. 46-49).

Dams further discloses that other ingredients can be included such as heat stability additives, that is, flame retardants, and “[w]hen the compositions are destined for use as high voltage insulating materials a preferred additive is alumina trihydrate employed in a proportion of from about 40 to about 160 parts by weight per 100 parts by weight of the polydiorganosiloxane (A)” (Dams col. 3, ll. 16-28). Indeed, we find that the range of the amount of ATH employed based on the amount of the silicone polymer disclosed by Dams is the same as or significantly overlaps with the claimed ranges for (a) a silicone polymer and (c) an anti-tracking agent in appealed claim 1.

We cannot subscribe to Appellants’ contention that one of ordinary skill in this art would not have combined the references in part because Dams is directed to improved color retention (*see above* pp. 15-16). Dams teaches that the organosiloxane compositions contain a pigment which can be present in an amount of 0.01 to 10 parts by weight, when using the compositions in “high and low voltage insulation” applications as “it is often desired to pigment the elastomer” so that “different colour[s] . . . assist in the identification of . . . different sources or functions” (Dams col. 1, ll. 13-19). As the Examiner points out, the compositions of Milbert can be used in electrical conductors (Answer 11). We point out here that the claimed compositions encompassed by claim 1 can include a pigment ingredient in the amounts taught by Dams because of the open-ended

transitional term “comprising,” as was the case with appealed claim 17. As we discussed, Appellants disclose pigments as ingredients and employ a pigment in the compositions of Specification Examples 1 and 2 which are useful for the same electric insulator purposes as taught in Dams (*see above* p. 6).

We find that the amounts for the components disclosed by Dams fall within or overlap the ranges of amounts for the same components specified in claim 1 except that Dams does not disclose the amounts of organosilicon products, including those termed “coupling agent” and “processing fluid” by Appellants, that can be added to the composition for in situ modification of the surface of the reinforcing and non-reinforcing filler. We find that one of ordinary skill in this art would have recognized from the teachings of Dams that the amount of the coupling agent and processing fluid used to modify the surface of the fillers can be determined by routine experimentation with respect to the properties desired.⁶ *See In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (C.C.P.A. 1980) (“[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art”); *In re Aller*, 220 F.2d 454, 456-58, 105 USPQ 233, 235-37 (C.C.P.A. 1955) (“[W]here general conditions of a claim are disclosed in the

⁶ It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom, *see In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (C.C.P.A. 1968), presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

Accordingly, we determine that one of ordinary skill in this art routinely following the teachings of Dams alone would have reasonably arrived at the claimed compositions encompassed by appealed claim 1, including each and every element thereof arranged as required therein, without recourse to Appellants’ disclosure. *See, e.g., Merck & Co., Inc. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1845-46 (Fed. Cir. 1989) (“That the ‘813 patent discloses a multitude of effective combinations does not render any particular formulation less obvious. This is especially true because the claimed composition is used for the identical purpose.”); *see also In re Peterson*, 156 F.3d 1325, 1330, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003); *In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *Boesch*, 617 F.2d at 276, 205 USPQ at 219.

We agree with the Examiner that Milbert evinces that hydroxyl-containing methylsiloxane processing fluids were well known in the art and that one of ordinary skill in this art would have routinely used a hydroxyl containing methylsiloxane known from this reference as the processing fluid in the compositions taught by Dams to arrive at the composition of appealed claims 1 and 33 as applied by the Examiner. We note here that these claims do not specify a particular hydroxyl containing methylsiloxane.

We are not persuaded by Appellants’ arguments and comparative evidence that the claimed compositions encompassed by appealed claim 1 are patentable over the teachings of Dams alone or as combined with Milbert. Appellants’ contention that the claimed compositions and those of

Dams and Milbert are directed to different applications is contrary to the clear teachings in Dams to use the compositions for high voltage insulators and indeed to include aluminum trihydrate in such compositions, and in Milbert to use the compositions for electrical conductors. Furthermore, it is apparent from Dams that one of ordinary skill in this art would have recognized that the amount of the coupling agent and processing fluid to use in the compositions can be determined by routine experimentation.

Turning now to Appellants' allegations of unexpected results, we find that the data in Specification Table I involves only the result obtained with the composition of Specification Example I, and Appellants rely on this data only for the single point that the composition achieved "Shore A Hardness" of "70" (Specification 13). No further statement is made in Specification Example I with respect to the performance of this composition or this data point. The Specification further discloses that aluminum hydroxide loading can be varied, and with respect to "[s]everal products made . . . by varying the ATH loading," discloses that "[t]o maintain the Shore A hardness around 70, the desired range being 60 to 80, the high vinyl and low vinyl gum ratios were changed accordingly, and ground quartz and fumed silica levels were maintained to obtain the specific gravity around 1.5" (Specification 13:3-8). In this respect, it is disclosed that "[a]ll these samples had >100 min tracking resistance per ASTM D2303 and passed 4.5KV per IEC 587" (Specification 13:8-9).

The Specification further discloses that "[a]dditional compositions were made according . . . to Example 1 . . . by varying the silane coupling agent (VTES), fumed silica and ATH" and "Table II shows the results

obtained for different properties” (Specification 13: 19-22). It is stated that “[a]t higher silane coupling agent concentrations (VTES), and higher ATH loading the product showed increased times to failure in tracking and erosion testing” (Specification 13:22 to 14:4).

We find that the data reported in Milbert Tables I, III, IV, and V was derived from compositions which differ from the claimed compositions encompassed by claim 1 and the compositions of Specification Example 1 and other compositions described in the Specification (Specification 13:19 to 14:4) in various respects. The most notable differences are the amounts of ingredients, and that none of the Milbert compositions contain ATH or the coupling agents and processing fluids used in the Specification compositions relied on by Appellants. We fail to find in the record any scientific argument or objective evidence provided by Appellants to account for these differences. The Shore A hardness reported in the Milbert Tables is below the range of 60-80 desired by Appellants.

It is well settled that the burden of establishing the practical significance of evidence in the record with respect to unexpected results rests with Appellants, which burden is not carried by mere arguments of counsel. *See, e.g., Geisler*, 116 F.3d at 1470, 43 USPQ2d at 1365-66; *In re Merck*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); *In re Longi*, 759 F.2d 887, 897, 225 USPQ 645, 651-52 (Fed. Cir. 1985); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (C.C.P.A. 1972); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (C.C.P.A. 1972); *In re D’Ancicco*, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (C.C.P.A. 1971). Appellants have not carried their burden.

An explanation of the significance of the evidence is particularly relevant where, as here, it is apparent from the record that there is no direct or indirect evidence reflecting the closest prior art which is Dams. Indeed, there is no explanation or evidence in the record which establishes that the evidence of record can be extrapolated to a reliable comparison of the claimed composition encompassed by claim 1 and the compositions of Dams disclosed to contain identical or substantially identical amounts of ATH in a manner which addresses the thrust of the rejection under § 103(a). *See, e.g., In re Baxter Travenol Labs.*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) (“[W]hen unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared to the closest prior art”); *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (C.C.P.A. 1979) (the claimed subject matter must be compared with the closest prior art in a manner which addresses the thrust of the rejection); *In re Blondel*, 499 F.2d 1311, 1317, 182 USPQ 294, 298 (C.C.P.A. 1974) (the indirect evidence provided a reliable indication of the performance of the closest claimed and prior art compounds).

We found that Dams would have taught the use of ATH in the specified amounts in silicone polymer containing compositions for the same high voltage insulation applications disclosed in the Specification and claimed in claim 1 (*see above* p. 18). Indeed, the principal difference between the claimed compositions and those of Dams is that claim 1 specifies particular ranges of amounts of coupling agent and processing fluid and Dams leaves that determination to routine experimentation by one of ordinary skill in this art.

Thus, Appellants' burden of establishing that the comparisons based on Milbert's compositions constitute a reliable one is heavy and has not been carried on this record. The differences in preparation and amount and kind of ingredients between the compared claimed compositions and those of Milbert evince a number of unfixed variables which have not been explained. *See In re Dunn*, 349 F.2d 433, 439, 146 USPQ 479, 483 (C.C.P.A. 1965) ("[W]e do not feel it an unreasonable burden on appellants to require comparative examples relied on for non-obviousness to be truly comparative. The cause and effect sought to be proven is lost here in the welter of unfixed variables.").

Furthermore, the fact that Dams is silent as to the relationship between the property of Shore A hardness and the addition of ATH does not militate against the clear teachings in the reference that this ingredient should be added for the same application taught by Appellants. Thus, on this record, Appellants have merely identified a property not described for the elastomers prepared from the same compositions disclosed by Dams, and there is no scientific explanation or objective evidence establishing that the result exhibited in this property by elastomers prepared by the claimed compositions encompassed by claim 1 is indeed unexpected. Therefore, Appellants' comparisons establish no more than the result expected from the addition of ATH. Indeed, there is no disclosure in the Specification or other evidence stating or otherwise establishing that such a result is indeed an unexpected one by one of ordinary skill in this art. *See, e.g., Geisler*, 116 F.3d at 1470, 43 USPQ2d at 1366 (explaining *In re Soni*, 54 F.3d 746, 34 USPQ 1684 (Fed. Cir. 1995)).

Moreover, even the evidence establishes an unexpected result in the property of Shore A hardness with respect to the silicone polymer composition of Specification Example 1 and the “several products” tested, we agree with the Examiner that the evidence with respect to such a small number of closely related compositions provides no assurance that the same behavior would be exhibited by the myriads of claimed silicone polymer compositions encompassed by appealed claim 1. *See In re Kulling*, 897 F.2d 1147, 1149-50, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990); *In re Clemens*, 622 F.2d 1029, 1035-36, 206 USPQ 289, 295-96 (C.C.P.A. 1980); *Lindner*, 457 F.2d at 508, 173 USPQ at 358.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Dams and Milbert with Appellants’ countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 17, 19 through 24 and 33 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The Examiner’s decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2005).

AFFIRMED

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Appeal 2006-2221
Application 09/000,824

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